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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/767,618 | 01/29/2004 | Chen-Hsiung Cheng | 9432-158DVB | 5657 |

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| EXAMINER |
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ABOAGYE, MICHAEL

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| ART UNIT | PAPER NUMBER |
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1725

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS | 04/03/2007 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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|------------------------------|--------------------------------------|-------------------------------------|--|
| Office Action Summary | Application No. 10/767,618 | Applicant(s) CHENG ET AL. | |
| | Examiner Michael Aboagye | Art Unit 1725 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-14, 16-19 and 24-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-14, 16-19 and 24-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 24- 26~~7~~ are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 24-26 contain the new matter limitations "wherein a maximum tool pitch is less than fifty percent of average spot size; wherein the maximum tool pitch is no more than forty percent of average spot size; wherein the maximum tool pitch is no more than thirty percent of average spot size. There is no support for these limitations in the disclosure. The disclosure that "a pitch size around two microns works well with the 10-micron laser spot" is not sufficient to overcome these new matter rejections

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 11, 12, 16-19 and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lai (US Patent No. 6,231,566) in view of Godet et al. (US Patent No. 2,964,645).

Lai teaches a laser ablating system "100" comprising: a laser source "10", a beam shaping optics "20", a scanner "40" made up of galvanometer scan mirrors, and a computer or tool path control module "50". Said laser ablation system operable to determine a tool path for ablating a layer of material from an exposed surface of a workpiece (cornea) with laser (see, column 4, lines 17-41); wherein the tool path describes a substantially constant arc speed (see, column 2, lines 3- 35); a plurality of lasers (see, column 4, lines 8-16) controlled by said tool path control module to perform ablation of a plurality of workpieces according to the tool path, and wherein said tool path module is operable to formulate a radius and a local angular speed (see, column 4, lines 8-41, figures 1 and 3-5). Lai teaches spiral scanning operation for generating rings

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wherein the diameter of said rings vary from layer to layer (column 2, lines 25-35). Lai also teaches a computer program interfaced with the scanner such that both uniform and non-uniform scan path can be generated depending on the degree of tuning (column 3, lines 29-40; column 3, line 65-column 4, line 7; and column 5, lines 38-65). The examiner interprets this as a capability of executing a tool path with a non-uniform radius and angular progression.

Regarding claims 16-19, Lai laser ablating system is operable to ablate or remove successive layers of corneas; wherein each of the corneas is composed of substantially identical material and has substantially identical geometric characteristics and each of the multiple regions the corneas are composed of substantially identical material and has substantially identical geometric characteristics (see, column 1 lines 14-20, column 5, lines 7-33).

Regarding claim 28, Lai, teaches progressive tool path executed at constant repetition rate (column 2, lines 39-47).

Regarding the equations recited in claims 29 and 30, it is noted that they are drawn to standard equations of motion and do not provide any contribution over the prior art, therefore said equations are considered by the examiner as not pertinent to the determination of patentability.

Lai, teaches progressive tool path executed at constant repetition rate (column 2, lines 39-47). Lai also teaches scanning layer by layer to describe a continuous spiral tool path wherein the radius of the tool path changes from layer to layer non-uniformly (column 2, lines 25-30, and, column 5, lines 1-67, particular reference to the equations describing the radii of progressive layer). Lai teaches a scanning means operable to

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vary the scanning velocity from ring to ring to in relation to the separation distance between said rings, however Lai do not expressly suggest modifying the angular velocity to accomplish constant arc speed.

Godet et al. teaches a system with a scanner and a control system operable to describe a spiral path such that a constant peripheral velocity along the spiral at any given instant (note, this implies speed) can be achieved by modifying the angular velocity of the tool path (column 1, line 60-column 2, lines 2). The examiner takes note of the fact that Godet et al.'s teaching is not drawn to laser processing, however it is drawn to the concept of a scanner and a motion describing a spiral trajectory, hence his teaching is relevant to the subject matter as claimed by the applicant. Furthermore It has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992).

It would have been obvious to one of ordinary skill in the art at the time the applicants invention was made to modify the angular velocity as the in relation to the changing radii of the progressive layer in the system of Lai as taught by Godet et al. to accomplish a constant arc speed (column 1, line 60-column 2, lines 2).

6. Claims 13, 14 and 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lai (US Patent No. 6,231,566) in view of Godet et al. (US Patent No.

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2,964,645) as applied to claim 11 above and further in view of Cutler et al. (US 5,798,927).

Lai further teaches a system operable to vary the scan speed according to the radius of the tool path (column 4, line 59- column 5, line 6); a beam shaping optical assembly or module operable in controlling the spot size based on the tool pitch or the pulse rate based of lasers (column 3, lines 29-50). It is noted that with such a system capability, the tool pitch or the pulse rate can be optimized to achieve variations of spot sizes. Lai does not expressly teach PZT scan mirror in his disclosed system.

However, Cutler et al. teaches a laser milling system for performing tool path operation using a piezoelectric transducer as a scanning device which is operable controls the repetition rate and the spot size and positioning by variation of the applied voltage across it (see, Cutler et al., column 10, lines 27-41, and figure 2).

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to use PZT scanner in the system of Lai as modified Godet et al. in view of the teachings of Cutler et al., wherein doing so would have meant, substituting one form of positioning device for another in the same art which would have enabled the appropriate setting of tool pitch for a preferred spot size base on applied voltage per revolution (see, Cutler et al., column 10, lines 27-41).

Response to Arguments

7. The examiner acknowledges the applicants' amendment received by USPTO on March 20, 2007. New claims 29 and 30 have been added, therefore claims 11-14, 16-19 and 24-30 are currently under consideration in the application.

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8. Applicant's arguments with respect to claims 11-14, 16-19 and 24-30 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Aboagye whose telephone number is 571-272-8165. The examiner can normally be reached on Mon - Fri 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000

AM

KEVIN KERNS
PRIMARY EXAMINER

Kevin Kerns 3/31/07


Michael Aboagye
Assistant Examiner
Art Unit 1725

03/30/2007